

NOMINATING PARTY: The United States of America

DRAFT DATE: July 14, 2011

FILE NAME: USA CUE13 MBTOC REPLIES 07-2011 RESEARCH

BRIEF DESCRIPTIVE TITLE:

Methyl Bromide Critical Use Nomination for Research for 2012 and 2013, U.S. Replies to MBTOC Report (TEAP 2011 Progress Report - Volume 1 - May 2011) (Submitted in 2011 for 2012 and 2013 Use Season)

CROP NAME (OPEN FIELD OR PROTECTED): Cucurbits, Eggplants, Strawberry, Tomatoes, Peppers, Ornamentals, Nursery and Propagative Material, Orchard Replanting, Soil Fumigation – Emissions Reduction, Post-Harvest Commodities, Cured Pork Products

Table 1. Quantity of Methyl Bromide Nominated

Year	NOMINATION AMOUNT
2012	2,576 kg
2013	2,546 kg

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METHYL BROMIDE CRITICAL USE RENOMINATION FOR METHYL BROMIDE FOR RESEARCH

1. SUMMARY OF THE NEED FOR METHYL BROMIDE AS A CRITICAL USE

With this submission, the U.S. Government is responding to the request in the TEAP Progress Report May 2011, Volume 1 for additional information on methyl bromide alternative research projects requiring methyl bromide. The United States has a robust research program for methyl bromide alternatives. Our researchers and others world-wide present the results of their findings at the Annual International Research Conference on Methyl Bromide Alternatives and Emissions Reductions. Continued research by the United States on alternatives will benefit researchers world-wide.

The CUN for 2012 and 2013 will allow researchers to include a methyl bromide standard in their test trials/plots for statistical comparison against the alternative fumigant and to test emissions reductions methodologies. The USDA National Institute for Food and Agriculture's methyl bromide alternatives research grant program currently requires that methyl bromide be included in its research projects. This requirement not only has research utility but also gains grower acceptance of the test results. While some researchers have not yet been able to finalize specific research plans for a number of reasons, including funding and a need to secure a project site, more project details are provided as available in this nomination.

Based on the additional information on research projects obtained, the United States is with this nomination adjusting its Critical Use Nomination for methyl bromide for research. Earlier this year, the United States had nominated 7.445 mt for use in 2012 and 7.537 mt for use in 2013,. The United States is now nominating 2.576 mt for use in 2012 and 2.546 mt for use in 2013. Below is a table summarizing the nomination for methyl bromide needed for research purposes. (See Table 2)

TABLE 2. Amount of Methyl Bromide Requested (kilograms) for Research. (Revised July 2011)

SECTOR		2012 Request (kgs)	2013 Request (kgs)
POST HARVEST	Cured Pork Products	45	45
	Low emission development and post-harvest commodity applications	114	114
SOILS – Fruits and Vegetables	Eggplant	20	20
	Pepper	135	154
	Tomato	203	154
	Strawberry fruit	16	16
SOILS – Nursery and Propagative Material	Fruit, Nuts, Flowers Nurseries (Fruits, nuts, trees, grapes, garden rose)	311	311
	Orchard replanting (almonds, grapes, stone fruit)	311	311
	Strawberry nurseries	681	681
	Ornamentals	356	356
SOILS – Emissions	Soil Fumigation – emissions reduction	384	384
TOTAL REQUEST (kg)		2,576	2,546

1. POST HARVEST COMMODITIES Project: Postharvest Insect Control with Methyl Bromide and Alternative Fumigants.

Investigator(s): USDA ARS, Spencer Walse

Project Description: This research generally umbrellas the effort of USDA-ARS to develop postharvest fumigations as phytosanitary treatments for insect control in all U.S. grown commodities. Specific research objectives include the comparative evaluation of the insecticidal efficacy of alternative fumigants to methyl bromide in postharvest applications and the design of postharvest control strategies that reduce postharvest use of methyl bromide and alternative fumigants.

Location(s): California

Research Amount of CUE MB Requested:

2012 – 34 kg

2013 – 34 kg

Crop: All post-harvest commodities

Acres: N/A

Pest(s): Stored product and quarantine insect pests

Regulation: Domestic and international phytosanitary regulation

2. POST HARVEST COMMODITIES Project: Development of Low-Emission Postharvest Fumigations

Lead Investigator(s): USDA ARS, Spencer Walse

Project Description: Important features of the proposed research include: the comparative evaluation of contemporary containment and reuse methods with methyl bromide (MB) versus registered alternative fumigants (i.e. phosphine, ozone, sulfuryl fluoride, propylene oxide), the development of novel technologies to reduce and eliminate atmospheric emissions of fumigants, the utilization of an experimental scale-up approach that begins in laboratory chambers and culminates in commercial chambers with commodity-specific industry input, and an economic cost analysis of promising technologies including, but not limited to, those applicable to stored product and postharvest scenarios.

Location(s): California

Research Amount of CUE MB Requested:

2012 - 80 kg

2013 – 80 kg

Crop(s): All post harvest commodities

Acres: N/A

Pest(s): Stored product and quarantine insect pests

Regulation: US and California regulation on emissions reduction is pending

3. CURED PORK PRODUCTS

No additional information was requested by MBTOC for this research project

Research Amount of CUE MB Requested:

2012 - 45 kg.

2013 – 45 kg.

4. TOMATO, PEPPER, AND EGGPLANT Project: Evaluation of TIF Plastic Mulches for Use in Eggplants, Tomato, and Pepper

Lead Investigator(s): University of Florida - Gulf Coast Research and Extension Center, Andrew MacRae

Project Description: Evaluation of several TIF formulations for use in eggplant, tomato, and pepper. Studies are targeted to determine the rates of methyl bromide alternatives that are required to achieve equivalent efficacy on soil borne pests as methyl bromide 67:33 at 175lbs/A. The studies are targeted to also determine the lowest rate possible of methyl bromide alternatives to help mitigate the buffer zone distances that are sure to reduce the total production area in central Florida.

Location(s): University of Florida – GCREC, Balm, FL

Research Amount of CUE MB Requested:

2012 - 20 kg peppers, 20 kg tomatoes, 20 kg eggplants

2013 – 20 kg peppers, 20 kg tomatoes, 20 kg eggplants

Crop: tomatoes, peppers, eggplant

Acres: 0.75 tomatoes, 0.75 peppers acres, 0.75 acres eggplants

Pest(s): purple nutsedge, annual grasses and broadleaf weeds, soil borne disease, rootknot and sting nematode

Regulation: N/A

5. TOMATO AND PEPPER Project: Anaerobic Soil Disinfestations (ASD) as a Non-Chemical Alternative to Methyl Bromide

Lead Investigator(s): USDA ARS Erin Rosskopf

Project Description: Efficacy of a non-chemical alternative to methyl bromide. Two trials (0.4 acres each) in 2012 and two trials (0.4 acres each) and two trials (0.5 acres each) in 2013 at 250 lb of 67:33 MB:Pic in 2012 and 450 lb of 67:33 MB:Pic in 2013

Location(s): Florida

Research Amount of CUE MB Requested:

2012 - 56.7 kg each for tomatoes and peppers

2013 - 75.9 kg each for tomatoes and peppers

Crop: Tomatoes and peppers

Acres: 2012 - 0.4 acres each for tomatoes and peppers; 2013 - 0.9 acres each for tomatoes and peppers

Pest(s): weeds, fungal plant pathogens, and nematodes

Regulation: N/A

6. TOMATO AND PEPPER Project: Efficacy of Compound ASI-261

Lead Investigator(s): USDA ARS Erin Rosskopf

Project Description: Efficacy Compound ASI-261, a nonvolatile compound which is drip applied to protect workers. Two trials each (0.4 acres each) in 2012 and 2013. 250 lb of 67:33 on 0.4 acres

Location(s): Florida

Research Amount of CUE MB Requested:

2012 - 38 kg each of tomatoes and peppers

2013 – 38 kg each of tomatoes and peppers

Crop: tomatoes and peppers

Acres: 2012 - 0.4 acres each tomatoes and peppers; 2013 - 0.4 acres each tomatoes and peppers

Pest(s): weeds, fungal plant pathogens, and nematodes

Regulation: N/A

7. TOMATO AND PEPPER Project: Long Term Sustainability of Methyl Bromide Alternatives in a Double Crop System

Lead Investigator(s): University of Florida - Gulf Coast Research and Extension Center, Andrew MacRae

Project Description: Evaluation of full fumigant systems for sustainability over a five year period from time of establishment. Large plot evaluations of efficacy on weeds, disease, and nematodes also including economical analysis of the treatments.

Location(s): University of Florida – GCREC, Balm, FL

Research Amount of CUE MB Requested:

2012 - 20 kg tomatoes, 20 kg peppers

2013 – 20 kg tomatoes, 20 kg peppers

Crop: tomatoes, peppers

Acres: 0.75 acres tomatoes, 0.75 acres peppers

Pest(s): purple nutsedge, annual grasses and broadleaf weeds, soil borne disease, rootknot nematode

Regulation: N/A

8. TOMATO Project: Methyl Bromide Alternatives for Tomatoes

Lead Investigator(s): North Florida Research and Education Center, Stephen M. Olson

Project Description: MB 98:2 primarily for a grafting project. Could include efficacy of different rates of DMDS under different types of mulches esp. TIF if a grant is approved

Location(s): Florida

Research Amount of CUE MB Requested:

2012 - 68 kg tomatoes

2013 – none needed, retiring

Crop: tomatoes

Acres: 2012 – 0.5 acres for tomatoes

Pest(s): weeds and nematodes

Regulation: N/A

9. STRAWBERRY FRUIT Project: Methyl Bromide Alternatives for Strawberries

Lead Investigator(s): UC Davis, Steve Fennimore

Project Description: Work on fumigant and nonfumigant alternatives. Five trials. MB is needed as a reference standard for grower outreach and for publication reference standards as much as the need for an untreated control.

Location(s): Salinas and Watsonville, California

Research Amount of CUE MB Requested:

2012 – 16 kg

2013 – 16 kg

Crop: strawberries

Acres: 0.1 acres

Pest(s): verticillium wilt and weeds

Regulation: N/A

10. STRAWBERRY NURSERY Project: Methyl Bromide Alternatives for Strawberry Nursery Stock

Lead Investigator(s): UC Davis, Becky Westerdahl

Project Description: Field trials to provide data on efficacy of iodomethane relative to methyl bromide, to obtain approval for use of iodomethane for use in treatments for certification of strawberry

nursery stock in California. Each of 6 total trials will have 1 methyl bromide treatment with 4 replications per treatment. Randomized complete block design. Each trial will require 227 kg (500 pounds) of methyl bromide. Methyl iodide will be per the certified nursery rate at a 300 lb/ac or 400 lb/ac rate depending on soil type. 33:67 Pic:MB

Location(s): typical strawberry nursery growing areas of California. High elevation nurseries are typically in Modoc, Siskiyou, Shasta and Lassen counties. Low elevation nurseries are typically in the San Joaquin Valley (e.g. San Joaquin and nearby counties). Trial location is dependent on the field having a resident population of *Meloidogyne hapl.*

Research Amount of CUE MB Requested:

2012 - 681 kg

2013 - 681 kg

Crop: strawberry nursery stock

Acres: 5 acres total per trial. Each trial consists of 6 treatments, one of which is methyl bromide.

Pest(s): *Meloidogyne hapla* (Northern root-knot nematode)

Regulation: “In accordance with the Regulations for the Nursery Stock Nematode Control Program, California Code of Regulations (CCR) Sections 3055 to 3055.6 and Section 3640, the California Department of Food and Agriculture (CDFA) hereby specifies soil treatment and handling procedures which, when verified and documented, are approved to ensure nematode cleanliness of both field and container grown nursery stock. Section 3640, CCR, makes it mandatory that nursery stock for farm planting be commercially clean with respect to economically important nematodes.” (From: CDFA NIPM Item #7)

11. NURSERY STOCK Project: Methyl Bromide Alternatives for Perennial Nurseries

Lead Investigator(s): UC Davis, Brad Hanson

Project Description: targets plant parasitic nematodes due to nursery certification requirements. Nursery stock growth data and yield effects from weed control and fungal pathogens will also be collected. Alternatives are not set in stone but are likely to include:

1,3-dichloropropene, Chloropicrin, Iodomethane, Metam sodium alone and in various combinations and application techniques and surface sealing tactics. Two field sites each year, 1 acre each, 350 lb/A MeBr 98:2

Location(s): California

Research Amount of CUE MB Requested:

2012 - 311.1 kg

2013 - 311.1 kg

Crop: perennial nurseries (tree, grape, garden rose)

Acres: 2012 - Two acres; 2013 - Two acres

Pest(s): parasitic nematodes

Regulation: California Code of Regulations (CCR) Sections 3055 through 3055.6, and 3640 which state, in part, that “Nursery stock for commercial farm planting must meet the requirements of the Nursery Stock Nematode Certification program to assure freedom from plant parasitic nematodes.”

This is summarized here: <http://www.cdfa.ca.gov/plant/pe/Nursery/pdfs/nipm1.pdf> The approved treatment list is here: http://www.cdfa.ca.gov/plant/pe/Nursery/pdfs/NIPM_7.pdf and the entire Nursery Inspection Procedures Manual (NIPM) is here: <http://www.cdfa.ca.gov/phpps/pe/Nursery/NIPM.html>

12. ORCHARD REPLANT Project: Methyl Bromide Alternatives for Orchard Replanting

Lead Investigator(s): UC Davis, Brad Hanson

Project Description: Alternatives not fully determined but likely to include: 1,3-dichloropropene Chloropicrin, Iodomethane, Metam sodium alone and in various combinations. Application techniques and surface sealing tactics will also be evaluated. 2 acres, 350 lb/A 98:2; Two field sites each year, 1 acre each

Location(s): California

Research Amount of CUE MB Requested:

2012 - 311.1 kg

2013 - 311.1 kg

Crop: orchard replanting (almond, grapes, stone fruit).

Acres: 2012 - 2 acres 2013 – 2 acres - 2013

Pest(s): replant disease complex which can include nematodes, Pythium, phytophthora, and other pathogens.

Regulation: N/A

13. ORNAMENTALS Project: Anaerobic Soil Disinfestations (ASD) as a Non-Chemical Alternative to Methyl Bromide

Lead Investigator(s): USDA ARS Erin Rosskopf

Project Description: Efficacy of a non-chemical alternative to methyl bromide. Two trials. 425 lb/A of 98:2 formulation on 0.25 acres

Location(s): Florida

Research Amount of CUE MB Requested:

2012 – 47.2 kg

2013 – 47.2 kg

Crop: Cut Flowers

Acres: 2012 - 0.25 acres 2013 - 0.25 acres

Pest(s): nematodes, weeds, and fungal plant pathogens

Regulation: N/A

14. ORNAMENTALS Project: Anaerobic Soil Disinfestations (ASD) as a Non-Chemical Alternative to Methyl Bromide

Lead Investigator(s): USDA ARS Erin Rosskopf

Project Description: Efficacy of a non-chemical alternative to methyl bromide. Two trials, two acres each in 2012 and again in 2013. MB rate = 425 lb/A of 80:20 formulation

Location(s): Florida

Research Amount of CUE MB Requested:

2012 –308.4 kg

2013 – 308.4 kg

Crop: Caladiums

Acres: 2012 – 2 acres 2013 - 2 acres

Pest(s): nematodes, fungal plant pathogens, and weeds

Regulation: Two acre experiments are QPS

15. SOILS - EMISSIONS Project: Methods of Minimizing Emissions from Preplant Soil Fumigation

Lead Investigator(s): USDA Agricultural Research Service; Suduan Gao, James Gerik, Dong Wang

Project Description: Efficacy tests for MeBr alternatives (e.g., Telone C35) applied with reduced rates under low permeability tarp. 0.25 acres in one trial or one application (45 kg) in spring and two trials in fall at 300 or 400 lb/ac rate. An experimental site has yet to be identified for “grape/almond/peach or perennial nursery crops”.

Location(s): central valley and coastal regions of California

Research Amount of CUE MB Requested:

2012 - 45 kg grape/almond/peach or perennial nursery crops; 90 kg ornamentals

2013 - 45 kg grape/almond/peach or perennial nursery crops; 90 kg ornamentals

Crop: grape/almond/peach or perennial nursery crops, and ornamental crops

Acres: 2012 - 0.25 acres grape/almond/peach or perennial nursery crops, 0.5 acres ornamental crops
2013 – 0.25 acres grape/almond/peach or perennial nursery crops, 0.5 acres ornamental crops

Pest(s): Nematodes, fungal pathogens and weeds

Regulation: for nursery crops: CDFA Nursery Manual – NIPM 7

16. SOILS - EMISSIONS Project: Chloropicrin and Methyl Bromide Emissions Reduction and Efficacy Using Totally Impenetrable Film

Lead Investigator(s): UC Davis, Husein Ajwa

Project Description: One 5 acre flux study in Monterey in 2012 and the same in Ventura in 2013 at 200 lb/ac. (50:50 MB:Pic). Two efficacy studies Ventura in 2012 and Monterey in 2013) on ½ acres at 200 lb/ac (50:50). New TIF will be used.

Location(s): Ventura and Monterey County, California

Research Amount of CUE MB Requested:

2012 - 249.3 kg

2013 - 249.3 kg

Crop: Strawberries

Acres: 2012 - 5.5 acres

2013 – 5.5 acres

Pest(s): n/a

Regulation: N/A

Note: Flux studies will repeat the Bakerfield studies

<http://mbao.org/2009/Proceedings/008NtowWMBao2009RevisedAbstract.pdf>